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NIXON & VANDERHYE PC  
1100 NORTH GLEBE ROAD  
8TH FLOOR  
ARLINGTON, VA 22201

EXAMINER

DICKENS, CHARLENE

ART UNIT PAPER NUMBER

2855

DATE MAILED: 02/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/421,086

Applicant(s)

KOHNO

Examiner

DICKENS

Group Art Unit

2855

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE -3- MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- ☒ Responsive to communication(s) filed on 7-22-02 letters
- ☐ This action is FINAL.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- ☒ Claim(s) 1-48 is/are pending in the application.
- ☐ Of the above claim(s) 1-48 is/are withdrawn from consideration.
- ☒ Claim(s) 29-34, 44-48 is/are allowed.
- ☒ Claim(s) 1-11, 14-28, 35-43 is/are rejected.
- ☒ Claim(s) 12, 13 is/are objected to.
- ☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement

## Application Papers

- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☐ All ☐ Some\* ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

\*Certified copies not received: \_\_\_\_\_

## Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other \_\_\_\_\_

Office Action Summary

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn and the 7/15/02 Advisory Action vacated.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 6, 9, and 11 are rejected under 35 U.S.C. 102(a) as being anticipated by Hecht et al. (US Pat 5,369,994). Hecht et al. teaches a flow amount measuring apparatus comprising: a fluid temperature detector 5 for detecting a fluid temperature; a heater 1 controllable to a first reference temperature which is either one of a fixed temperature and a variable temperature responsive to the fluid temperature detected by the fluid temperature detector; a first and second flow amount temperature detectors (2, 3) disposed at either one of an upstream side and a downstream side of the heater with respect to a direction of fluid flow and changes its temperature in response to the fluid flow amount and the fluid flow direction; and detecting means (Figs. 3,4) for detecting the fluid flow amount variable with the fluid flow direction from the temperature

detected by the fluid amount detector; the detecting means is for producing output corresponding to a difference between the temperature detected by the fluid amount detector and a fixed temperature; the detecting means is for producing an output corresponding to a difference between the temperature detected by the fluid amount detector and the temperature detected by the fluid temperature detector; a substrate on which the fluid temperature detector, the fluid amount detector and the heater are formed, the substrate having a cavity (Fig. 2) underneath the fluid temperature detector; said second temperature detector being disposed at one of the upstream and downstream sides of the heater; a control circuit 30 connected to the heater, the first temperature detector and the second temperature detector and including a heater control part and a flow amount measuring part, the first temperature detector being for detecting a first temperature and connected to at least one of the heater control part and the flow amount measuring part, the second temperature detector being connected to the flow amount measuring part, and the flow amount measuring part producing an output varying with a difference between a second temperature detected by the second temperature detector and a second reference temperature and with a flow direction of fluid passing along the substrate (col. 3, lines 57-col. 5, line 42.

4. The following is a quotation of 35 U.S.C. 103(a) which forms

the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 8, 10 and 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hecht et al. in view of Yamashita et al. (US Pat 5,936,157). Claims differ from Hecht et al. with the recitations of: the heater includes a strip which turns at a plurality of points to have a total width larger than that of the fluid temperature detector and the fluid amount detector in the fluid flow direction; a substrate on which the fluid temperature detector, the fluid amount detector and the heater are formed, the substrate having slits at the upstream side of the flow amount detector and the downstream side of the heater; the substrate has cavities at locations underneath the first temperature detector, the heater and the second temperature detector. Yamashita et al. teaches the heater 4 includes a strip which turns at a plurality of points to have a total width larger than that of the fluid temperature detector and the fluid amount detector in the fluid flow direction; a substrate on which the fluid temperature detector, the fluid amount detector and the heater are formed, the substrate having slits at the upstream

side of the flow amount detector and the downstream side of the heater and the substrate has cavities at locations underneath the first temperature detector, the heater and the second temperature detector (Figs, 2, 4, 6, 8, 10, 12, 14, 16, 20, 22) for the purpose of providing a flow rate detecting element permitting improvements of response to a change in fluid temperature while keeping a high reliability in strength of the fluid temperature measuring element. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the heater includes a strip which turns at a plurality of points to have a total width larger than that of the fluid temperature detector and the fluid amount detector in the fluid flow direction; a substrate on which the fluid temperature detector, the fluid amount detector and the heater are formed, the substrate having slits at the upstream side of the flow amount detector and the downstream side of the heater; the substrate has cavities at locations underneath the first temperature detector, the heater and the second temperature detector in Hecht et al. as taught by Yamashita et al. for the purpose of providing a flow rate detecting element permitting improvements of response to a change in fluid temperature while keeping a high reliability in strength of the fluid temperature measuring element.

6. Claims 4, 5, 7, 19-25, and 35-41 are rejected under 35

U.S.C. 103(a) as being unpatentable over Hecht et al. in view of JP 7-286876. Claims differ from Hecht et al. above with the recitation of detecting the flow amount in a backward/reverse direction. JP 7-286876 teaches detecting fluid flow amount in a backward/reverse direction for the purpose of improving the reliability by detecting flow rate corresponding to the flow direction by detecting the flow direction of intake air. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have detected the flow amount in a backward/reverse direction in Hecht et al. as taught by JP 7-286876 for the purpose of improving the reliability by detecting flow rate corresponding to the flow direction by detecting the flow direction of intake air.

7. Claims 26-28, 42 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over the modified Hecht et al., as applied to claims 19 and 35 above, in further view of Yamashita et al. Claims differ from the modified Hecht et al. with the recitations of: the heater includes a strip which turns at a plurality of points to have a total width larger than that of the fluid temperature detector and the fluid amount detector in the fluid flow direction; a substrate on which the fluid temperature detector, the fluid amount detector and the heater are formed, the substrate having slits at the upstream side of the flow amount detector and the downstream side of the heater; the

substrate has cavities at locations underneath the first temperature detector, the heater and the second temperature detector. Yamashita et al. teaches the heater 4 includes a strip which turns at a plurality of points to have a total width larger than that of the fluid temperature detector and the fluid amount detector in the fluid flow direction; a substrate on which the fluid temperature detector, the fluid amount detector and the heater are formed, the substrate having slits at the upstream side of the flow amount detector and the downstream side of the heater and the substrate has cavities at locations underneath the first temperature detector, the heater and the second temperature detector (Figs, 2, 4, 6, 8, 10, 12, 14, 16, 20, 22) for the purpose of providing a flow rate detecting element permitting improvements of response to a change in fluid temperature while keeping a high reliability in strength of the fluid temperature measuring element. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the heater includes a strip which turns at a plurality of points to have a total width larger than that of the fluid temperature detector and the fluid amount detector in the fluid flow direction; a substrate on which the fluid temperature detector, the fluid amount detector and the heater are formed, the substrate having slits at the upstream side of the flow amount detector and the downstream side of the heater; the



substrate has cavities at locations underneath the first temperature detector, the heater and the second temperature detector in the modified Hecht et al. as taught by Yamashita et al. for the purpose of providing a flow rate detecting element permitting improvements of response to a change in fluid temperature while keeping a high reliability in strength of the fluid temperature measuring element.

8. Claims 12 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 29-34 and 44-48 are allowed over the prior art. The following is a statement of reasons for the indication of allowable subject matter: the prior art does not teach and/or suggest producing an output signal varying as a function of the difference between a temperature detected by the second temperature detector and a reference temperature and the flow direction of fluid passing along the substrate nor the first reference temperature of the heater is controlled to vary with the first temperature detected by the first temperature sensor and the second reference temperature is fixed nor the first temperature detector is connected to the second temperature detector so that the second temperature detected by the second temperature detector is corrected by the first temperature detected by the first temperature detector in

combination with the other recited claimed limitations.

9. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Dickens whose telephone number is (703) 305-7047. Any inquiry of a general nature or relating to the status of this application should be directed to the receptionist or the customer service representative whose telephone numbers are (703) 308-0956 or (703) 308-4800 respectively. The fax numbers are (703) 305-3431 and (703) 305-3432.



cd/dickens  
February 9, 2003



HEZRON WILLIAMS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800